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AUTHOR Putnam, Linda L.
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ABSTRACT

Laboratory simulations combine the strengths of lab experiments and field studies while avoiding many of their liabilities. They permit the emotional involvement, the time needed for development of norms and interlocked systems of interaction, and the broad range of variables typical of field settings, yet allow for experimental controls and random sampling of subjects. Of the two basic kinds of simulations (experimental, controlled by the researcher; and free, shaped by participants' behavior), free simulations appear to reflect real experience more closely. To further enhance participants' involvement, organizational simulations can select a meaningful environment and provide an instructor's manual and set of procedures. While simulations have inherent limitations, notably their obvious artificiality, they remain a viable arena for both qualitative and quantitative research, particularly for work on evolutionary theories, social constructions of reality, and systems approaches. (MM)

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CREATING FIELD RESEARCH IN THE LAB: SIMULATION AS COMMUNICATING AND ORGANIZING

Linda L. Putnam
Purdue University
Department of Communication
W. Lafayette, IN 47907

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Linda L. Putnam
Purdue University

Research as well as teaching experiences problems with providing a holistic experience and a sense of organizational history for controlled observation in a laboratory environment. Laboratory studies on organizational phenomena typically resemble group and dyadic research in that they lack a sense of totality of structure, interconnectedness of units, power relationships, and the complexity of a myriad of other salient organizational and communicative variables. In particular, organizations typically exhibit a sense of history--recurring patterns of communicating and behaving and knowledge of past organizational events. Realizing the difficulty of creating laboratory studies that have a modicum of representational validity, most researchers have turned to the field as a setting for their investigations.

But as the age-old debate between laboratory and field studies reveals, field research is not without its flaws. A brief review of the key issues in this debate frames our discussion of simulations as a research tool. This paper provides definitions and criticisms of field and laboratory research, describes the general types of organizational simulations, presents the characteristics of each type, discusses the advantages and disadvantages of using simulations for research, and concludes with a brief description of a program for moving back and forth between the field and the lab.

The debate between field and laboratory arenas of research often centers on the issue of rigor versus relevance. Some researchers argue that field studies lack controls and random selection of subjects; hence they cannot be precise and rigorous in their measurement of variables and interpretation of findings. Laboratory studies, in contrast, lack the relevance and representativeness of research in the field. Although there is some truth to the claims espoused by both sides, the major difference, as both Redding (1970) and Bouchard (1976) note, is one of setting. Field research entails observation of people in situ or on locale, whereas lab research observes people in a setting where the variables are controlled at the discretion of the researcher. Redding (1970) illustrates how field studies can be conducted with a sense of rigor and precision characteristic of laboratory research--particularly in quasi-experimental designs and in stimulation of natural environments (Salancik, 1979). In contrast, Fromkin and Streufert (1976) illustrate how the use of control groups in the lab and manipulation of variables not only increases confidence in conclusions but also has relevance to behaviors in actual organizations. Thus the distinction between field and lab is primarily one of location, rather than one of inherent lack of rigor or relevance.

In like manner, the primary distinction between laboratory and field research does not derive from research methods. Participative observation, interviews, and survey research are <u>not</u> the exclusive property of field studies and experimental designs are <u>not</u> limited to laboratory settings. To treat location of research as synonymous with particular methods confounds the nature of research with its setting. Any method can be used successfully in either setting. In effect, research methods are independent of the setting in which

a study takes place.

I am not, however, contending that the only difference between laboratory and field investigations is location. Bouchard (1976) argues that field settings are more sensitive to special characteristics of organizations than are laboratory studies. For our purposes, if simulations are to be an effective tool for research, they should capitalize on these characteristics. Bouchard identifies four characteristics that distinguish laboratory from field settings: intensity, range, frequency and duration, setting effects, and representativeness. Variables in the field have a different emotional intensity than most variables in lab studies. Special context factors like hirings and firings cause considerable emotional stress and commitment that are not always present in simple laboratory designs. In like manner, variables exhibit a wider range of variation in the field than in the lab. Specifically, group size and span of control often exhibit a far wider range than is seen in most laboratory studies. Frequency and duration refer to the natural time units in field studies. Field research takes place within long temporal structures that evolve with changing environmental conditions, while lab studies occur within a short time span. Field settings are open and dynamic--individuals come and go; thus a large number of factors are at work in any one situation. Finally, context features in field settings make the findings more representative of actual organizational behavior than occurs in the lab.

Field studies, however, are subject to a number of problems--chief among them is the notion of representativeness. In their survey 561 journal articles on organizational behavior, Dipboye and Flanagan (1979) conclude that field research is no more generalizable than laboratory studies. While laboratory research tends to develop a science of the college sophomore, field studies

are limited to male, professional, technical, and managerial personnel in product-based organizations. We know very little about females, non-professional and non-managerial personnel, especially in service and private sector organizations. Their content analysis of articles suggest that both field and laboratory studies reflect a narrow sampling of subjects, settings, and behaviors. They conclude that "blanket statements concerning the inherent external validity of the field are not only inaccurate, but they serve to hender the development of organizational research" (Dipboye & Flanagan, 1979, p. 150). Additional weaknesses of field research, as noted by Bouchard (1976), are causal ambiguity, i.e., the difficulty in testing for causality; over-reliance on correlational data, over-use of self-report survey data; and the tendency to either rely on one organization (N=1) or to confound organizational differences by sampling across diverse organizations.

Laboratory research gains the advantage of controls and the ability to test for cause-effect relationships, but frequently at the cost of artificiality and experimental effects. Specifically, Weick (1965) criticizes laboratory research for demand effects caused by the influence of the experimenter on the subject, the influence of the sterile laboratory on the subject's behavior, and the influence of the subject on the experimenter and task. Weick (1977) contends that the overriding issue in laboratory research is "to know what people are actually responding to--this is the sine qua non to create an interpretable experiment" (p. 125). He urges researchers to take the role of the subject and see how he or she would view the experiment. In effect, the researcher must create a plausible setting with high face validity while manipulating

variables and maintaining some controls. Laboratory studies have not lived up to their potential to provide complex views of organizational life because they have failed to provide requisite variety. "No researcher can sense complexity in excess of his or her own complexity and that of the research instruments" (Weick, 1977, p. 124). Weick urges us to take advantage of the liabilities of laboratory studies and to make laboratories into media for sensing and registering events. Laboratories are analogous to organizations in a number of ways: asymmetrical power relationships between experimenter and subject resembles relationships between superiors and subordinates; employees seldom understand why they perform tasks in labs and employees rarely see the rationale and holistic nature of their organizational tasks; subjects in labs are suspicious of studies and frequently try to second guess the experimenter and employees in organizations are often suspicious of their superiors' motives and engage in internal politics and hidden agendas (Weick, 1977). Laboratory studies could create organizational experiences that capitalize on the similarities between constraints in experiments and restrictions in organizations.

One alternative for creating requisite variety in the lab is the use of organizational simulations. Jandt (1974) contends that simulations are ways of bringing field research into the lab. In effect, through the use of simulations researchers can take advantage of the strengths of both settings while reducing some of the liabilities of each. Simulations provide a healthy blend between lab and field studies because they incorporate the characteristics of intensity, range, and duration of variables that resembles field settings while allowing for experimental controls and random

sampling of subjects. That is, simulations offer the emotional involvement that typifies behavior in field settings, the time necessary for development of norms and interlocked systems of interaction, and the introduction of a broad range of variables. An additional dividend of the use of simuations for laboratory research is the opportunity to see the evolution of a zero-history organization and to discover unique hypotheses and concepts from observing this transformation of a confused, disoriented set of individuals into a system of interlocking activities and relationships. Thus, simulations are uniquely equipped to handle models of organizing based upon evolutionary theories or upon the social construction of reality.

Fromkin and Streufert (1976) distinguish between two basic types of organizational simulations: free and experimental. Experimental simulations are highly controlled by the researcher; interactions between subjects are restricted to a set of rules and set procedures. Typical examples of experimental simulations are the organizational decision models employed by Cohen and Cyert (1965, 1962). They employ computer-based simulations to test for the effects of competitive marketplace, information sharing, and decision steps on price setting, output determination, and product diversification. Although they describe their simulation as the Carnegie Tech management game (1962), their introduction and manipulation of variables allows for a greater range and duration than is typical of most experimental games. Experimental simulations also differ from role-playing in that the participants play themselves rather than acting as if they were other people.

Role-playing tends to reduce the degree of involvement by asking the subjects to assume a part--one which may or may not fit their set of behaviors. Free simulations differ from experimental ones in that the events that occur in the simulation are shaped by the behavior of the participants. Hence, individuals are free to modify organizational inputs, process, and outputs through their own behaviors. Through their actions participants aim to cope with their own environments, and in turn, they shape their environment and the choices available to them for appropriate behaviors. In free simulations, the ongoing events influence the processes and outcomes of organizing--each organization exhibits variablity due to the ways combinations of interlocked behaviors evolve differently over time. Subjects are given a set of rules, structures, and procedures; variables are manipulated within these confines; but participants make choices that allow them to shape their own environment. Examples of free simulations include Hi-Fli Fireworks, SIMCORP, the Executive Game (Bartol, 1974), Zimbardo's prison study (Haney, Banks, & Zimbardo, 1973), and Bormann's Group Dynamics Incorporated (1975).

The greatest advantage of free simulations over experimental ones is an attempt to be a partial replica of the real world organization. Zelditch and Evan (1962) argue that simulations are minatures or only partially representative of actual organizational events. They urge researchers to examine their theoretical models and decide which properties in the theory should be incorporated into the simulation; in particular, how many and what kinds? Then researchers should determine which properties are iconic ones that tranfer from actual organizations to simulations in a scale-like

relationship and which ones are analogic in that they substitute for real properties, but they bear a resemblance to them. For example, a simulation that creates an effective incentive system for organizational work might substitute grade points for wages in an analogic way or it might attempt to pay subjects for their labor, but reduce the scale in an iconic manner. Similarly, span of control, size, and levels in hierarchical structure might represent iconic adjustments in a simulation. Variables in a simulation do not need to be exact replicas of properties in "real" organizations, but they should function in similar ways. The issue of complexity is the way the properties are represented, not whether they are real or unreal.

Other suggestions for enhancing realism in organizational simulations includes selecting a meaningful environment, providing an instructor's manual and set of procedures to reduce apathy and confusion, assembling the organization long enough to develop systematic patterns of behavior, and allowing interactions to evolve naturally (Fromkin & Streufert, 1976). The environment may appear realistic to the experimenter, but not to the subjects. But, for the most part, subjects who participate in organizational simulations report high levels of involvement in the project (Fromkin & Streufert, 1966; Haney, Banks, & Zimbardo, 1973). The issue of realism, in Drabek and Haas's (1967) view, rests on the way a system interacts with its environment. "People start behaving like people only when the environment they are behaving in has 'reality' for them; in particular, that they start to exhibit the full range of adaptation and learning which is the essence of humanness only when the environment is complex, rich,

and challenging (Kennedy, 1955, pp. 16-17). The degree of realism may vary inversely with the range of manipulation and experimental control.

The ultimate choice in deciding whether to employ laboratory or field designs or in deciding whether to use an organizational simulation hinges on the research questions. Field studies are certainly more appropriate than are laboratory investigations for some types of research. The difference between laboratory and field studies is a matter of degree, not kind; and the subject responds to the research context (Redding, 1970). In developing a program of research, it may be more effective to move back and forth between the field and the lab. In my own work on bargaining, this transfer of settings has provided me with additional insights about the complexities of the multiple roles of communication and with precision and rigor in developing hypotheses about bargaining communication. Organizational simulations aid in making the transfer between the two settings isomorphic. That is, simulations can be designed to reflect the complexity of patterns discovered in case studies. Field studies, in turn, can be based on concepts and hypotheses generated from laboratory investigations. An additional dividend of simulations is a setting for the pilot testing of field designs or for the pre-testing of research methods. Use of simulations should recognize their inherent limitations. That is, subjects are aware that they are involved in a simulated experiment; behaviors become compressed into short time periods; and subjects realize that the simulation has a termination point.

This paper argues that organizational researchers should consider laboratory simulations--particularly free simulations--as

a viable arena for conducting qualitative as well quantitative research. It is particularly suited to models of organizing based on evolutionary theories, social construction of reality, or systems approaches. It provides a way of bringing field observations into the lab for generating or testing particular concepts and it allows the researcher to control or to manipulate certain features of the organization's environment. Regardless of the setting we choose, we should keep in mind Weick's (1977) advice:

> All of us are ignorant people who are thinking. If labs help us to think better and more imaginatively, we should retain them. But if our thinking becomes more sluggish under the "spell" of the lab, then we should spend our time someplace else (p. 128).

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